

**IN THE CLAIMS**

Please amend claims 1, 17 and 28 as follows:

1           1. (Currently Amended)   An apparatus, comprising:  
2           a converter for converting an input optical signal to an original electrical signal;  
3           an identification unit for receiving said original electrical signal, for generating a  
4           first signal comprising said original electrical signal delayed by a predetermined quantity  
5           of time, for generating a second signal comprising said original electrical signal not  
6           delayed, for comparing said first and second signals, for forming a third signal in  
7           dependence upon said comparing of said first and second signals, and for detecting a bit  
8           rate in dependence upon said third signal;  
9           a clock generator for generating a separate reference clock signal in dependence  
10          upon said detected bit rate; and  
11          a recovery unit for recovering an input clock signal and data from said input  
12          optical signal in dependence upon said reference clock signal;  
13          wherein said identification unit further comprises:  
14          a first unit for delaying said original electrical signal, for performing an exclusive  
15          -OR operation upon said first and second signals, and for forming said third signal in  
16          dependence upon said exclusive-OR operation performed upon said first and second  
17          signals; and  
18          a second unit for low-pass filtering said third signal, and for detecting said bit rate

19 ~~in dependence upon~~ directly from a voltage level of said low-pass filtered third signal and  
20 without using a phase locked loop;

21 said second unit comprising:

22 a low-pass filter for low-pass filtering said third signal;

23 an analog-to-digital converter for receiving said low-pass filtered third  
24 signal, and for converting said low-pass filtered third signal from an analog signal  
25 to a digital signal; and

26 a bit rate deriving unit for deriving said bit rate ~~in dependence upon~~  
27 ~~information related to~~ directly from a voltage level of said digital signal received  
28 from said analog-to-digital converter ~~and a predetermined bit rate.~~

29 2. (Previously Presented) The apparatus of claim 1, said apparatus comprising an  
30 optical receiver for receiving optical signals having a plurality of different bit rates.

1 3. (Previously Presented) The apparatus of claim 1, said bit rate of said input  
2 optical signal comprising a transmission rate.

1 4. (Previously Presented) The apparatus of claim 1, further comprising an  
2 amplifier for amplifying said original electrical signal received from said converter.

1 5. (Original) The apparatus of claim 4, said amplifier outputting said amplified

2       electrical signal to said identification unit.

1           6. (Previously Presented) The apparatus of claim 1, said converter comprising an  
2       optoelectric converter.

1           7. (Previously Presented) The apparatus of claim 1, said identification unit  
2       comprising a bit rate identification unit.

1           8. (Previously Presented) The apparatus of claim 1, said comparing performed by  
2       said identification unit comprising said identification unit performing an exclusive-OR  
3       logic operation upon said first and second signals.

Claims 9 - 11. (Cancelled)

1           12. (Previously Presented) The apparatus of claim 1, said first unit comprising a  
2       bit rate identification signal generator.

1           13. (Previously Presented) The apparatus of claim 1, said second unit comprising  
2       a bit rate deriving unit.

Claim 14. (Cancelled)

1           15. (Previously Presented) The apparatus of claim 1, said first unit comprising:

2           a buffer unit for receiving said original electrical signal, and for outputting two  
3 duplicate signals substantially equivalent to said original electrical signal, said two  
4 duplicate signals comprising a primary signal and a secondary signal;

5           a delay unit for receiving said primary signal, for delaying said primary signal by  
6 said predetermined quantity of time, and for outputting said delayed primary signal, said  
7 delayed primary signal comprising said first signal and said secondary signal comprising  
8 said second signal; and

9           an operator unit for performing said exclusive-OR logic operation upon said first  
10 and second signals.

1           16. (Previously Presented) The apparatus of claim 1, said clock generator  
2 comprising a plurality of oscillators for generating clocking signals of different  
3 frequencies, said oscillators being selectively operated to generate said reference clock  
4 signal in dependence upon said bit rate detected by said identification unit.

1           17. (Currently Amended) A method of operating a receiver which functions  
2 independently of a bit rate of a received signal, comprising:

3           receiving an original signal;

4           generating a resultant signal by performing an exclusive-OR operation on a first  
5 signal and a second signal, said first signal comprising said original signal delayed by a

6 predetermined quantity of time, said second signal comprising said original signal not  
7 delayed;

8 determining a bit rate of said original signal by low-pass filtering said resultant  
9 signal and without using a phase locked loop, and ~~determining~~ deriving said bit rate  
10 directly from a voltage level of the low-pass filtered resultant signal and without using  
11 said phase locked loop;

12 generating a reference clock signal separate from said original signal and in  
13 dependence upon said determined bit rate; and

14 recovering an input clock signal and data from said original signal in dependence  
15 upon said reference clock signal.

Claim 18. (Cancelled)

1 19. (Previously Presented) The method of claim 17, said original signal  
2 comprising an input optical signal, said method further comprising:

3 converting said input optical signal to an electrical signal;

4 outputting two duplicate signals substantially equivalent to said electrical signal,  
5 said two duplicate signals comprising a primary signal and a secondary signal; and

6 delaying said primary signal by said predetermined quantity of time, and  
7 outputting said primary signal, said delayed primary signal comprising said first signal.

1           20. (Previously Presented) The method of claim 17, said first and second signals  
2 comprising electrical signals.

1           21. (Previously Presented) The method of claim 17, said method comprising  
2 receiving signals having a plurality of different bit rates.

1           22. (Previously Presented) The method of claim 17, said original signal received  
2 comprising a plurality of original signals received, said recovering of said input clock  
3 signal and data from said original signal being performed for said plurality of original  
4 signals received, said plurality of original signals received having a respective plurality  
5 of different bit rates.

1           23. (Original) The method of claim 17, said recovering of said input clock signal  
2 and data from said original signal being performed for a plurality of original signals  
3 received, said plurality of original signals received having a respective plurality of  
4 different bit rates.

1           24. (Previously Presented) The method of claim 17, said method comprising  
2 receiving optical signals having a plurality of different bit rates.

1           25. (Previously Presented) The method of claim 17, further comprising:

2 receiving an input optical signal;  
3 converting said input optical signal to an original electrical signal;  
4 outputting two duplicate signals substantially equivalent to said original electrical  
5 signal, said two duplicate signals comprising a primary signal and a secondary signal; and  
6 delaying said primary signal by said predetermined quantity of time, and  
7 outputting said primary signal, said delayed primary signal comprising said first signal,  
8 said outputted primary signal comprising said second signal.

1 26. (Previously Presented) The method of claim 17, said receiving of said original  
2 signal being performed by an optoelectric converter, said original signal being an optical  
3 signal, said optoelectric converter converting said original optical signal to an electrical  
4 signal, said method further comprising:

5 outputting two duplicate signals substantially equivalent to said electrical signal,  
6 said two duplicate signals comprising a primary signal and a secondary signal, said  
7 outputting of said two duplicate signals being performed by a buffer; and

8 delaying said primary signal by said predetermined quantity of time, and  
9 outputting said primary signal, said delayed primary signal comprising said first signal,  
10 and said outputted primary signal comprising said second signal.

1 27. (Previously Presented) The method of claim 17, said generating of said  
2 reference clock signal being performed by a clock generator, said clock generator

3 comprising a plurality of oscillators for generating clocking signals of different  
4 frequencies, and said oscillators being selectively operated to generate said reference  
5 clock signal in dependence upon said detected bit rate.

1 28. (Currently Amended) An apparatus, comprising:

2 a converter for converting an input optical signal to an original electrical signal;

3 an identification unit for receiving said original electrical signal, for generating a  
4 first signal comprising said original electrical signal delayed by a predetermined quantity  
5 of time, for generating a second signal comprising said original electrical signal not  
6 delayed, for forming a third signal by performing an exclusive-OR logic operation upon  
7 said first and second signals, and for detecting a bit rate in dependence upon said third  
8 signal;

9 a clock generator for generating a reference clock signal in dependence upon said  
10 detected bit rate; and

11 a recovery unit for recovering an input clock signal and data from said input  
12 optical signal in dependence upon said reference clock signal;

13 said identification unit comprising:

14 a first unit for delaying said original electrical signal, for performing said  
15 exclusive-OR operation upon said first and second signals, and for forming said third  
16 signal; and

17 a second unit for detecting said bit rate of said original signal by low-pass filtering



18 said third signal, and ~~for detecting~~ by deriving said bit rate ~~in dependence upon~~ directly  
19 from a voltage level of said low-pass filtered third signal and without using a phase  
20 locked loop.

1 29. (Previously Presented) The apparatus of claim 28, said clock generator  
2 comprising a plurality of oscillators for generating clocking signals of different  
3 frequencies and for selectively operating said oscillators to generate said reference clock  
4 signal in dependence upon said bit rate detected by said identification unit.

1 30. (Previously Presented) The apparatus of claim 28, said input optical signal  
2 comprising a plurality of input optical signals, said recovering of said input clock signal  
3 and data from said input optical signal being performed for each of said plurality of input  
4 optical signals, said plurality of input optical signals received having a plurality of  
5 different bit rates.

1 31. (Previously Presented) The apparatus of claim 30, said converter comprising  
2 an optoelectric converter.

1 32. (Previously Presented) The apparatus of claim 31, said identification unit  
2 comprising a bit rate identification unit.

Claim 33. (Cancelled)

1           34. (Previously Presented) The apparatus of claim 28, said second unit  
2 comprising:

3           a low-pass filter for low-pass filtering said third signal;

4           an analog-to-digital converter for receiving said low-pass filtered third signal, and  
5 for converting said low-pass filtered third signal from an analog signal to a digital signal;  
6 and

7           a determiner for determining said bit rate in dependence upon said digital signal  
8 received from said analog-to-digital converter.

1           35. (Previously Presented) The apparatus of claim 28, said first unit comprising:

2           a buffer unit for receiving said original electrical signal, and for outputting two  
3 duplicate signals substantially equivalent to said original electrical signal, said two  
4 duplicate signals comprising a primary signal and a secondary signal;

5           a delay unit for receiving said primary signal, for delaying said primary signal by  
6 said predetermined quantity of time, and for outputting said primary signal, said delayed  
7 primary signal comprising said first signal; and

8           an operator unit for performing said exclusive-OR logic operation upon said first  
9 and second signals.

1           36. (Previously Presented) The apparatus of claim 28, said clock generator  
2 comprising a plurality of oscillators for generating clocking signals of different  
3 frequencies, said oscillators being selectively operated to generate said reference clock  
4 signal in dependence upon said bit rate detected by said identification unit.

Claims 37 - 40. (Canceled)

1           41. (Previously Presented) The apparatus of claim 1, wherein said recovery unit  
2 comprises a programmable recovery unit.

1           42. (Previously Presented) The method of claim 17, wherein said recovery step is  
2 performed by a programmable recovery unit.

1           43. (Previously Presented) The apparatus of claim 28, wherein said recovery unit  
2 comprises a programmable recovery unit.